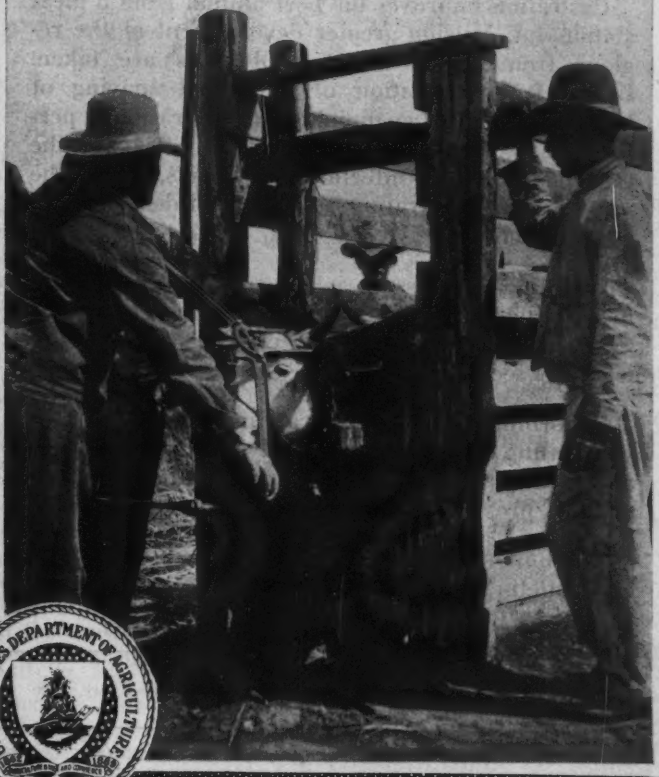
U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1600

Rev.ed. follows

DEHORNING, CASTRATING, BRANDING, AND MARKING BEEF CATTLE



HORNS and choice beef carcasses, as a rule, do not go together. Feeder cattle having horns do not feed out so well as dehorned cattle. Badly bruised carcasses are usually found in shipments of horned cattle. Bruises detract greatly from the appearance of the carcasses, thus lowering their sale value. Besides the damage done to meat, the hide is frequently damaged. Dehorned cattle usually bring from 25 to 75 cents a hundredweight more than horned cattle of similar quality and condition.

Castration improves the beef animal from a meat standpoint, causing greater development of the regions from which the valuable cuts are taken. Losses from castration of bulls and spaying of heifers are almost negligible if the operation is performed by an experienced person. Flies are the greatest source of infection of wounds, hence the importance of castrating, spaying, and dehorning in cool weather.

Branding is necessary as a means of identification in many of the range-cattle-production areas. The brand should be small, however, and placed where it can be seen readily.

Dehorning, castrating, branding, marking, and vaccinating may be performed most satisfactorily and with greatest speed when a well-constructed chute is provided for holding the animal.

This bulletin is a revision of and supersedes Farmers' Bulletin 949, Dehorning and Castrating Cattle.

Washington, D. C. Issued May, 1929

DEHORNING, CASTRATING, BRANDING, AND MARKING BEEF CATTLE

By W. H. BLACK, *Senior Animal Husbandman*, and V. V. PARR, *Animal Husbandman, Animal Husbandry Division, Bureau of Animal Industry*

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DEHORNING

GENERALLY SPEAKING, the younger cattle are when they are dehorned, the better beef animals they will make. If dehorning is done while the calf is young, the operation will be less severe. It is important to dehorn during cool weather to avoid infestation from flies. On ranches in the Southwest, however, dehorning paints are commonly used when calves are dehorned in the late spring and early fall months. These paints offer some protection against screw-worm infestation and permit dehorning at branding time. Dehorning may be accomplished by the use of saws (fig. 1) and mechanical dehorners (figs. 2 and 3), of which there are a number of desirable kinds. The growth of horns in young calves may be prevented by using caustic soda or potash.

DEHORNING WITH SAWS AND MECHANICAL DEHORNERS

Saws or mechanical dehorners are used almost exclusively in the range country, where it is necessary to handle great numbers of cattle in a short period of time. Greater speed is possible when mechanical dehorners are used, though when only a few cattle are to be dehorned, the saw is very satisfactory. In dehorning with saws or any of the mechanical dehorners, it is advisable to remove the horn from a point about one-quarter of an inch below the junction of the horn with skin or hide. If this is done, the skin will grow over the horn-forming cells and prevent further growth of horns. If mechanical dehorners are used on animals other than very young calves, it is necessary to have the animal held securely. In the range country, a combined dehorning and branding chute (known as a squeeze), with one side movable, is used almost exclusively for yearlings and older cattle. Calves are usually dehorned at the same time that they

are branded, and chutes are rarely used. Instead, the calf's head is held firmly as the dehorner is used. Under farm conditions, where branding is not resorted to, chutes with stationary sides are more commonly used. (See cover design.) Plans for a squeeze and desirable types of stanchion gates are shown in Figures 7 to 11, inclusive.

CAUSTIC FOR PREVENTING HORN GROWTH

In small herds kept under close supervision, a satisfactory method of dehorning is the use of caustic soda or potash. The method is in reality one of preventing horn growth rather than actual removal of the horns. Best results are obtained by this method on very young calves when only small "buttons" are present. Certain precautions should be taken in the use of the caustic, as this chemical compound eats or burns flesh coming in contact with it. The hair should be clipped from around the base of the small, undeveloped horns or buttons, and petrolatum applied (fig. 4) to prevent the caustic from coming into contact with the skin. The end of the caustic to be held in the hand should be wrapped in paper or cotton and the other end moistened slightly. The moistened end of the caustic is then rubbed on the undeveloped horn. (Fig. 5.) Two or three applications are necessary, the caustic being allowed to dry after each application. If the applications are thorough, further horn growth will be prevented. Calves treated with caustic should be protected from rain for a few days following the treatment.

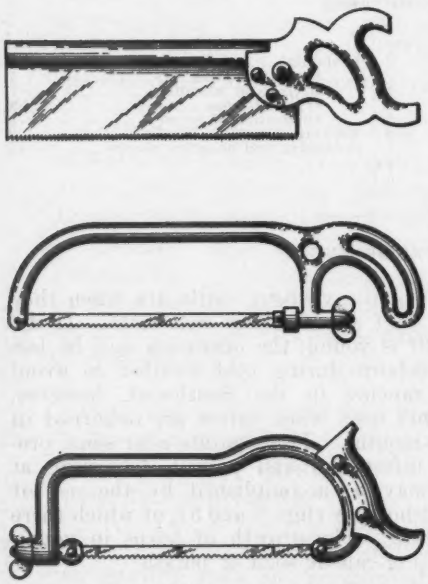

FIGURE 1.—Types of saws commonly used in dehorning

TREATMENT OF WOUND

If dehorning is done in cool weather, when there are no flies, no treatment is required. If, on the other hand, the operation is performed when there is danger of infestation by flies, it is important to apply a fly repellant to the wound. Pine tar smeared on the wound is usually effective. A mixture of pine tar and tannic acid is also very satisfactory. In many sections of the country, especially in the warmer areas, screw-worm infestation is rather common and

severe. The Special Report on Diseases of Cattle, revised edition, 1923,[1] contains the following directions for screw-worm treatment:

For proper treatment an animal suffering from screw worms should be caught and thrown. Chloroform is then poured into the wound, taking care that it

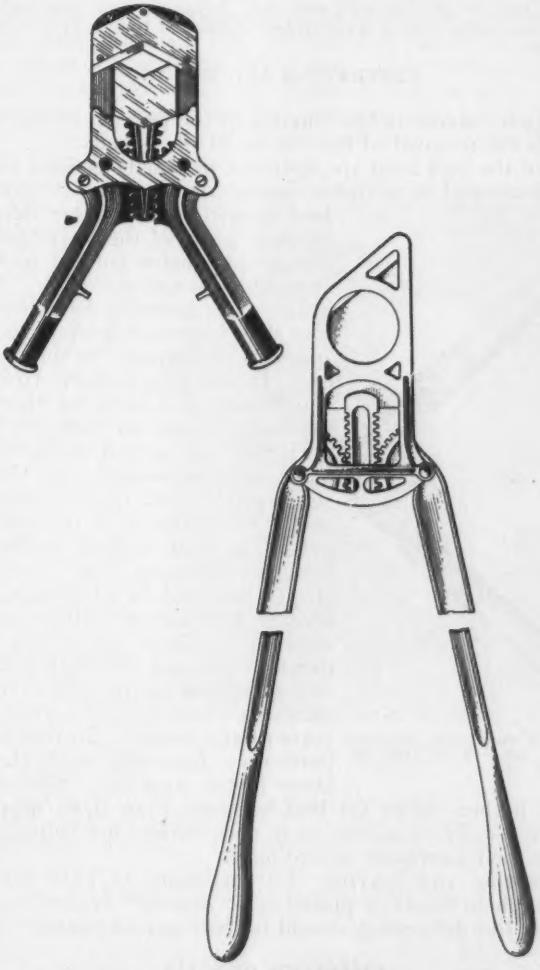

FIGURE 2.—Two types of mechanical dehorners known as dehorning clippers. One is provided with two knives, so constructed as to give four cutting surfaces; the other has a single blade

penetrates thoroughly into all the burrows of the screw worm, if necessary using a slender stick or a small bunch of twisted hay as a probe. The animal should be held for several minutes in order to insure the continued action of

[1] RANSOM, B. H. ANIMAL PARASITES OF CATTLE. U. S. Dept. Agr., Bur. Anim. Indus., Special report on diseases of cattle, rev. ed., pp. 506–507. 1923.

chloroform. Instead of chloroform, gasoline may be used, and carbon tetrachlorid is said by some authorities to give good results. Finally, the dead or dying maggots may be removed with forceps, the wound washed with a weak carbolic or cresylic acid solution, and painted with pine tar to reduce the chances of further attack by flies. Finally the wound should be dressed with a carbolic or cresylic ointment to promote healing and thus prevent further infection, or the wound may be painted with pine tar. Dipping in the arsenical dips used for destroying cattle ticks is a convenient method of treatment if many animals are involved.

CASTRATION AND SPAYING

Castration consists in the removal of the testicles of the male, and spaying is the removal of the ovaries in the female.

Males in the beef herd are castrated primarily because beef qualities are developed to a higher degree in the steer. A more refined beef animal with greater development of those parts of the body that furnish the most valuable cuts of meat results from this operation. Bulls, if 2 years old or over, normally have heavy crests and show a greater development of forequarters as compared to the hind quarters. This is objectionable from a meat standpoint, and bulls of this age are generally classed as "bologna" bulls.

FIGURE 3.—A mechanical dehorner especially adapted for the dehorning of calves

Heifers are spayed to increase their value as meat animals, by eliminating the possibility of their becoming with calf. The opinion is common among producers that spayed heifers fatten faster on the range than "open" or unspayed heifers. In addition, spaying is used as a means of culling undesirable breeding heifers. As a management practice, spaying eliminates the necessity of separating the heifers from bulls or steers. Fat, spayed heifers under 2 years of age produce carcasses that compare very favorably with those from steers of the same age. Spayed heifers command higher values for beef purposes than those unspayed, as buyers are usually suspicious as to open heifers not being with calf, and make their purchases accordingly.

In castrating and spaying, it is necessary to have the animals thrown and held firmly or placed in a "squeeze" or dehorning chute. Castration, like dehorning, should be done in cool weather.

CASTRATION OF BULLS

Bull calves from a few weeks up to 8 months of age may be castrated without serious consequences. Hemorrhage or bleeding is more pronounced in old animals, and greater care must be used in castrating mature bulls. If a bull calf is not castrated before he is

8 months old, he may become "staggy," which is very objectionable in the feeder or fat steer.

In performing the operation there are two methods of making the incision; one is to slit each side of the scrotum parallel to the medium line. The incision should be made on one side and the testicle removed from that side before making the incision on the other side. The incision should be made over the center of the testicle, and from about the top one-third to the lower end. It is essential to extend the slit well toward the lower end of the scrotum so as to allow for proper drainage. The other method is to grasp the lower end of the scrotum and stretch it out tightly, cutting off the lower one-third. In this method the ends of both testicles are exposed. One testicle should be removed at a time and may be accomplished by pulling or pressing the testicle out of the scrotum and cutting it off, allowing 3 or 4 inches of the cord to remain on the testicle. In the case of young calves, the cord may be cut squarely off, but in older bulls it is advisable to twist the cord rather tightly by holding the cord with the left hand and with the right hand twisting the free end before severing the cord. Some cattlemen prefer to draw the cord tightly over the index finger of the left hand and sever it by scraping with the knife. Either of these last two methods of severing the cords on older animals has a tendency to check the flow of blood. It is necessary to perform the operation with clean instruments under sanitary conditions. Wounds and any infection that may arise may be treated the way outlined under "Dehorning."

FIGURE 4.—Hair has been clipped and petrolatum applied around the undeveloped horn

SPAYING OF HEIFERS

The practice of castrating or spaying heifers is more common in the range country than in other beef-producing areas. The extent to which this operation is performed depends largely on the status of the beef-cattle industry. When values are comparatively high and the trend is upward, there is a tendency toward increasing the size of the breeding herd by retaining most of the females for

breeding purposes. In other times, when cattle prices are low and there is no immediate prospect of an upward swing in cattle values, there is a noticeable increase in the number of heifers spayed.

The losses resulting from spaying, when properly done, are very small, being little more than those resulting from the castration of bulls. Comparatively few ranchmen spay their heifers themselves. Ordinarily, veterinarians or experienced cattle spayers are employed to do the work.

BRANDING

During the earliest days of the cattle-raising industry in the United States the practice of branding and marking cattle as a means of identification was begun and has been retained, through changing methods of handling cattle, until the present day. The custom is still widely practiced. In the more thickly populated farming communities, where pastures are usually small and the number of cattle raised annually is limited to a few head on each farm, the custom of branding or marking is not so popular as in sections less densely populated. On small farms the owner sees his cattle daily, knows them by their natural markings, and generally does not consider branding or marking necessary. But in the case of the man who produces cattle on a large scale, utilizing large pastures or the open range, and does not come in contact with them often, as the smaller farmer does, the practice of branding, in particular, is considered necessary, and often earmarking is done as an additional means of identification.

FIGURE 5.—Applying caustic to the undeveloped horn

The brand of a cattleman is the trade-mark of his line of production. The most successful ranchers take great pride in it, and attempts are made to maintain a standard. Seeing a good animal bearing a cattleman's brand gives the cattleman an exultant feeling of proprietorship. The brand is a thing guarded closely, and in all cattle-raising States, particularly the range States, the law deals severely with those guilty of changing or tampering with brands or marks in any way.

In some Western States the law compels the branding of livestock that is to be turned upon the range. The livestock laws of Arizona, for instance, state specifically that it is unlawful for any unbranded

livestock except unweaned calves to run on the range. Other States go farther and forbid the slaughter of unbranded animals, and nearly all Western States require the keeping of a record of brands of slaughtered animals.

AGE AT BRANDING

Among cattlemen the common practice is to brand calves before they are weaned. After weaning, the probability of a calf's going astray is far greater than before, and, in order to lessen the loss thus incurred, branding is done at the earliest possible time. It sometimes occurs that disputes arise as to the ownership of a calf. In this event the custom is to concede ownership to the owner of the cow which the calf sucks. These statements are particularly true where the open range is used or where the mixing with other cattle is probable. In the days of the "round-up" it was customary to brand fall calves in the spring and spring calves in the fall, provided the cattle were not worked during the summer. In that case the branding was seldom delayed.

Cattle that change ownership are usually rebranded, and old brands are crossed out.

METHODS OF BRANDING

There are two general methods used in branding cattle. These are (1) casting or throwing, and (2) chute branding. Throwing has given way to the latter method because of injuries often incurred, the greater degree of ease with which the operation may be done in a properly constructed chute, the saving of labor, and less disturbance of the cattle in the corral.

It is very difficult to build a squeeze that will be equally effective in holding small calves and older cattle. For branding, ordinarily it is best to consider the yearling as the smallest-sized animal to be worked in a squeeze, and resort to other methods in branding calves. Progressive ranchmen in many of the highly developed ranching communities are discarding the old method of "roping out" calves on the range, or even using ropes in corrals. Instead, herds are being worked in corrals, calves are separated from the cows and driven into small pens known as "crowding pens." The calves are thrown by hand, the smaller ones being "flanked" and the larger ones "mugged" down. Flanking or mugging is less likely to result in injury than is roping.

Chute branding older cattle is preferable to throwing, regardless of the method. Care should be taken in closing the squeeze to avoid injury. It is very easy to crush a hip of an animal that is being confined in a powerful squeeze. For that reason the leverage of a squeeze should not be so great that the operator is likely to overlook the degree of pressure applied.

If chute branding is to be done, the location of the brand on the animal should be one easily reached through the bars of the squeeze. In addition, the letters, numerals, or other characters composing the brand should be of a kind easily made. Intricate characters lead to confusion in brand reading as well as to difficulty in branding.

TYPES OF IRONS

Branding irons are of two general types, namely, "running" irons and "stamping" irons, the former being plain hooks, the use of which is described below. Some States have laws prohibiting the use of running irons, for the reason that in the hands of unscrupulous persons they can be used effectively in changing brands. There is little defense for the use of extremely large characters in a brand. A character 4 inches in height is usually large enough for identification purposes, especially if it is applied properly. Characters with extremely acute angles should be avoided if a stamping iron is to be used, because the heat of the iron may cause a blotch instead of showing the lines composing the brand. Open letters such as **O**, **C**, **D**, **P**, and **Q** can be made distinctly with a stamping iron. Such letters as **A**, **M**, **N**, **W**, and **X** can usually be made with a running iron by making the required number of applications of the iron to complete the letter. Such letters, however, may be made into single stamping irons by rounding the acute angles and giving plenty of space between the lines.

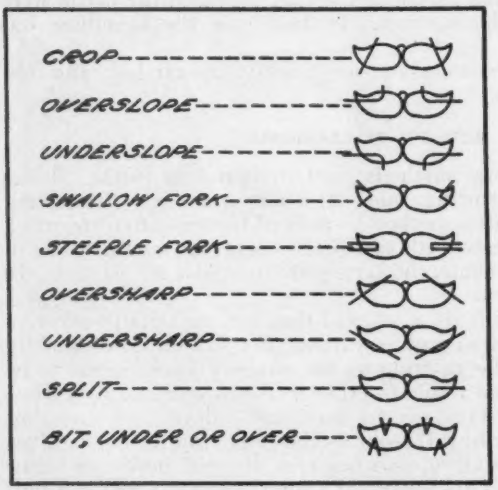

FIGURE 6.—Common earmarks of cattle

The rod or bar iron or steel of which the characters or their component parts are made should be large enough to hold sufficient heat and yet small enough to make a neat line. Material ranging from one-fourth to one-half inch in diameter is commonly used, and ⅜-inch material is a desirable dimension.

Handles on branding irons should be 2½ feet long or longer to permit handling the irons effectively.

APPLICATION OF BRAND

In applying the brand, caution should be exercised that the iron is neither too hot nor too cold. Judgment will come with experience. Deep burning is cruel and unnecessary; if the surface of the hide is merely scorched the brand usually peels and remains distinct. The slipping of an iron usually results in a poor imprint, and should be guarded against. Keep the face of the branding irons free from burnt hair by rubbing it against the ground after finishing the brand. Linseed or other cooling oils are very good to apply to a brand after the work is finished.

MARKING

The practice of marking cattle by cutting the ears is almost as universal as branding, and is usually done at the same time as branding. It is not uncommon for cattlemen to perform all operations—castration, branding, and marking—at the same time. Earmarks are rather secondary to branding, although they are recorded

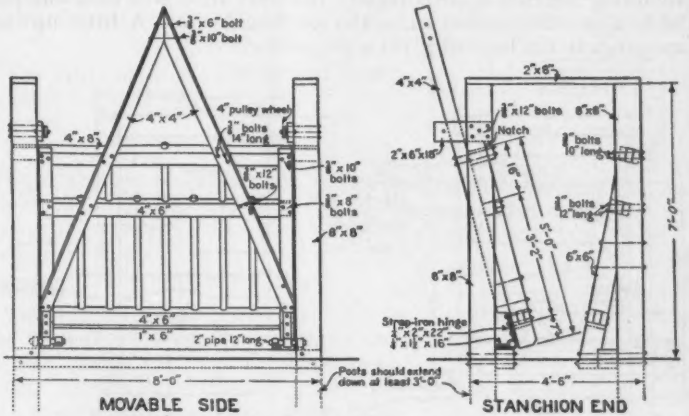

FIGURE 7.—Movable side and stanchion end of cattle squeeze. Design 2197

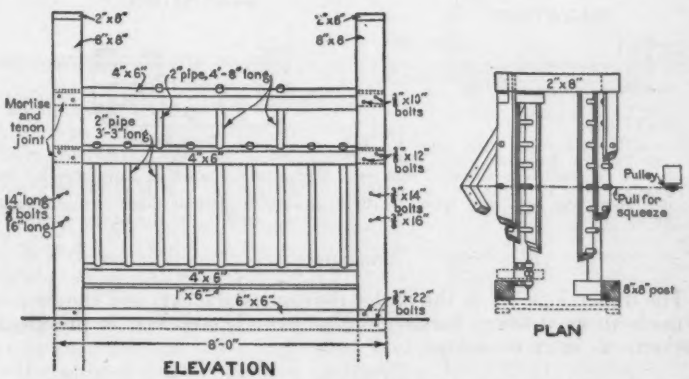

FIGURE 8.—Stationary side and plans of cattle squeeze, showing position of pulley. Design 2197

in the brand records and are protected by law. Either or both ears may bear a mark, and a reason often given for marking is that cattle can be identified from the direct front or rear, as it is often difficult to get a side view of wild cattle in pasture or on the range.

A sharp knife should be used in marking cattle, as the cartilage of the ear is usually tough and clean cuts should be made. Some of the common marks are described below and are illustrated in Figure 6.

CROP

Fold the ear lengthwise and make the cut at right angles to the folded edge.

OVERSLOPE

Make incision a fraction of an inch from the point, toward the head, where the upper surface of the ear turns up. Cut down in a rounding manner approximately one-half inch and then cut parallel to a line that would halve the ear lengthwise. A little upward slope given to the last cut gives a graceful curve.

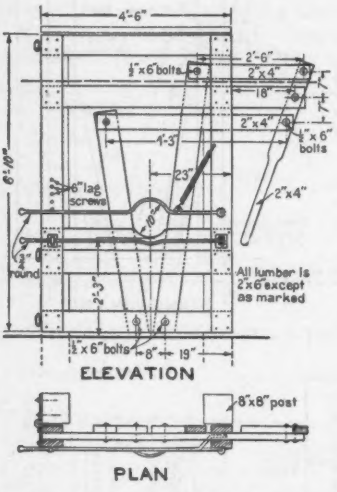

FIGURE 9.—Stanchion gate, type A. In this type of dehorning chute the head is held in position by a curved iron rod passing over the nose and a similar one above the neck just back of the head

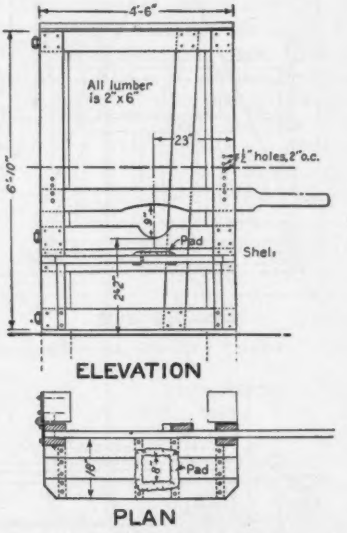

FIGURE 10.—Stanchion gate, type B. In this type the nose is placed in a hol and held there by a bar pressing downward against the top of the neck.

UNDERSLOPE

The underslope cut is the under portion of the ear, and the first cut is made in an upward manner. The second, however, is practically the same as in an overslope.

SWALLOW FORK

Fold the ear lengthwise. From a point three-fourths or 1 inch from the tip, depending on the size of the ear, cut toward the outer edges in such direction or manner that a triangular section with one-half or three-fourths inch base will be removed.

STEEPLE FORK

Fold the ear lengthwise. Make the first cut at right angles to the seam, and the second cut parallel to the seam. Remove a rectangular section of the ear.

OVERSHARP

The cut is begun at the same point as for an overslope, but brought downward and in a straight line to the median line at the tip of the ear.

UNDERSHARP

Cut as an underslope except an upward straight line to the point mentioned above.

SPLIT

The knife blade is inserted and drawn to outer edge of the ear.

BIT, UNDER OR OVER

Fold the ear crosswise at the point where the bit is to be made. Remove a trianglar section, as in making a shallow fork.

DEWLAP MARKS

In some localities marks are made in the dewlap. This method offers no particular advantage over the usual methods of marking and branding, gives rise to a greater chance of screw-worm infection, and it seems but an application of good husbandry to discourage the practice.

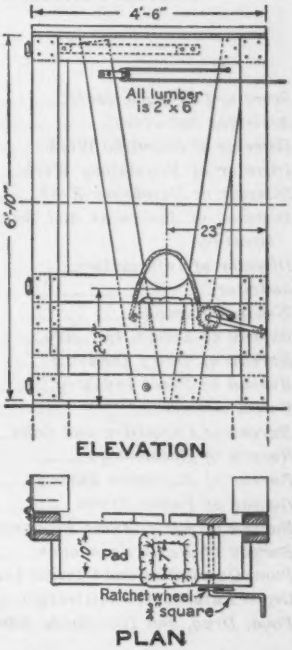

FIGURE 11.—Stanchion gate, type C. In this type the head is held down by means of a rope or chain over the neck and connected with a pulley and ratchet. The nose is held in the same way as in Figure 10

DEHORNING AND BRANDING CHUTES

In making a chute for holding cattle it is especially desirable in localities where branding is done, to have one side movable so that the animal can be held snugly under pressure and without injury against the side of the chute. A branding chute so constructed is known as a cattle squeeze. (Figs. 7 and 8.) This type, aside from being useful in connection with branding, also has an advantage over the ordinary chute when castrating and vaccinating are to be done, as the animal can be held more firmly. The design shown on the cover of this bulletin is typical of the more commonly used chutes with the stationary sides. If a chute with both sides stationary is desired, the two sides may be constructed alike, as in Figure 8. The dehorning gate may be set up at the end of the squeeze and the two used together very conveniently.

In the dehorning of cattle it is essential to have the front of the chute so constructed that the head of the animal may be held absolutely firm. There are many designs in use which are satisfactory. Figures 9, 10, and 11 illustrate three types that are frequently used by cattlemen. Specifications for each type are given in connection with the drawings.

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XUM

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GENERALLY SPEAKING, the younger cattle are when they are dehorned, the better beef animals they will make. If dehorning is done while the calf is young, the operation will be less severe. It is important to dehorn during cool weather to avoid infestation from flies. On ranches in the Southwest, however, dehorning paints are commonly used when calves are dehorned in the late spring and early fall months. These paints offer some protection against screw-worm infestation and permit dehorning at branding time. Dehorning may be accomplished by the use of saws (fig. 1) and mechanical dehorners (figs. 2 and 3), of which there are a number of desirable kinds. The growth of horns in young calves may be prevented by using caustic soda or potash.

DEHORNING WITH SAWS AND MECHANICAL DEHORNERS

Saws or mechanical dehorners are used almost exclusively in the range country, where it is necessary to handle great numbers of cattle in a short period of time. Greater speed is possible when mechanical dehorners are used, though when only a few cattle are to be dehorned, the saw is very satisfactory. In dehorning with saws or any of the mechanical dehorners, it is advisable to remove the horn from a point about one-quarter of an inch below the junction of the horn with skin or hide. If this is done, the skin will grow over the horn-forming cells and prevent further growth of horns. If mechanical dehorners are used on animals other than very young calves, it is necessary to have the animal held securely. In the range country, a combined dehorning and branding chute (known as a squeeze), with one side movable, is used almost exclusively for yearlings and older cattle. Calves are usually dehorned at the same time that they are branded, and chutes are rarely used. Instead, the calf's head is

held firmly as the dehorner is used. Under farm conditions, where branding is not resorted to, chutes with stationary sides are more commonly used. (See cover design.) Plans for a squeeze and desirable types of stanchion gates are shown in figures 7 to 11, inclusive.

CAUSTIC FOR PREVENTING HORN GROWTH

In small herds kept under close supervision, a satisfactory method of dehorning is the use of caustic soda or potash. The method is in reality one of preventing horn growth rather than actual removal of the horns. Best results are obtained by this method on very young calves when only small "buttons" are present. Certain precautions should be taken in the use of the caustic, as this chemical compound eats or burns flesh coming in contact with it. The hair should be clipped from around the base of the small, undeveloped horns or buttons, and petrolatum applied (fig. 4) to prevent the caustic from coming into contact with the skin. The end of the caustic to be held in the hand should be wrapped in paper or cotton and the other end moistened slightly. The moistened end of the caustic is then rubbed on the undeveloped horn (fig. 5). Two or three applications are necessary, the caustic being allowed to dry after each application. If the applications are thorough, further horn growth will be prevented. Calves treated with caustic should be protected from rain for a few days following the treatment.

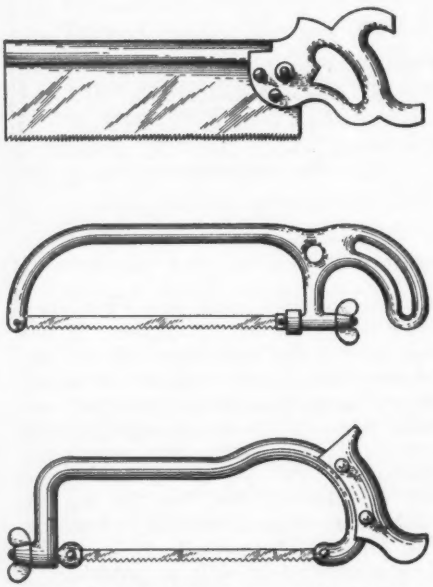

FIGURE 1.—Types of saws commonly used in dehorning.

TREATMENT OF WOUND

If dehorning is done in cool weather, when there are no flies, no treatment is required. If, on the other hand, the operation is performed when there is danger of infestation by flies, it is important to apply a fly repellant to the wound. Pine tar smeared on the wound is usually effective. A mixture of pine tar and tannic acid is also very satisfactory. In many sections of the country, especially in the warmer areas, screw-worm infestation is rather common and severe. The Special Report on Diseases of Cattle, revised edition, 1923,[1] contains the following directions for screw-worm treatment:

[1] RANSOM, B. H. ANIMAL PARASITES OF CATTLE. U. S. Dept. Agr., Bur. Anim. Indus., Special report on diseases of cattle, rev. ed., pp. 506–507. 1923.

For proper treatment an animal suffering from screw worms should be caught and thrown. Chloroform is then poured into the wound, taking care that it penetrates thoroughly into all the burrows of the screw worm, if necessary using a slender stick or a small bunch of twisted hay as a probe. The animal should be held for several minutes in order to insure the continued action of chloroform. Instead of chloroform, gasoline may be used, and carbon tetrachlorid is said by some authorities to give good results. Finally, the dead or dying maggots may be removed with forceps, the wound washed with a weak carbolic or cresylic acid solution, and painted with pine tar to reduce the chances of further attack by flies. Finally the wound should be dressed with a carbolic or cresylic ointment to promote healing and thus prevent further infection, or the wound may be painted with pine tar. Dipping in the arsenical dip used for destroying cattle ticks is a convenient method of treatment if many animals are involved.

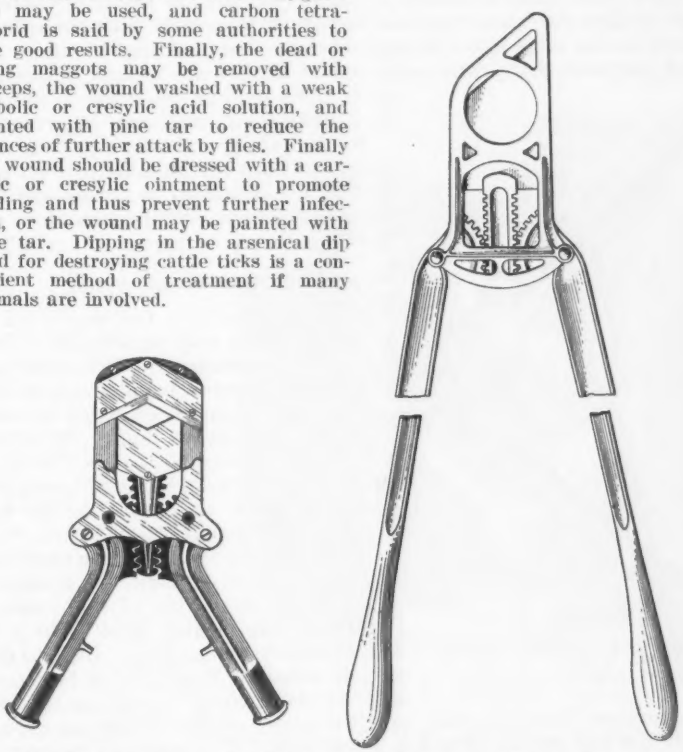

FIGURE 2.—Two types of mechanical dehorners known as dehorning clippers. One is provided with 2 knives, so constructed as to give 4 cutting surfaces; the other has a single blade.

CASTRATION AND SPAYING

Castration consists in the removal of the testicles of the male, and spaying is the removal of the ovaries in the female.

Males in the beef herd are castrated primarily because beef qualities are developed to a higher degree in the steer. A more refined beef animal with greater development of those parts of the body that furnish the most valuable cuts of meat results from this operation. Bulls, if 2 years old or over, normally have heavy crests and show a greater development of forequarters as compared to the hind quarters. This is objectionable from a meat standpoint, and bulls of this age are generally classed as "bologna" bulls.

Heifers are spayed to increase their value as meat animals, by eliminating the possibility of their becoming with calf. The opinion

is common among producers that spayed heifers fatten faster on the range than "open" or unspayed heifers. In addition, spaying is used as a means of culling undesirable breeding heifers. As a management practice, spaying eliminates the necessity of separating the heifers from bulls or steers. Fat, spayed heifers under 2 years of age produce carcasses that compare very favorably with those from steers of the same age. Spayed heifers command higher values for beef purposes than those unspayed, as buyers are usually suspicious as to open heifers not being with calf, and make their purchases accordingly.

In castrating and spaying, it is necessary to have the animals thrown and held firmly or placed in a "squeeze" or dehorning chute. Castration, like dehorning, should be done in cool weather.

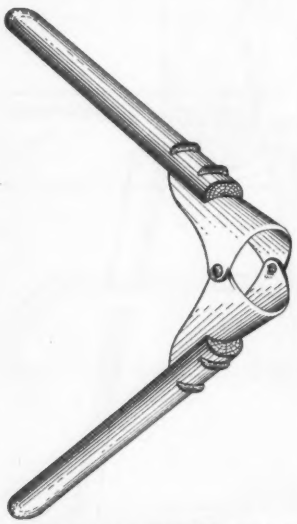

FIGURE 3.—A mechanical dehorner especially adapted for the dehorning of calves.

CASTRATION OF BULLS

Bull calves from a few weeks up to 8 months of age may be castrated without serious consequences. Hemorrhage or bleeding is more pronounced in old animals, and greater care must be used in castrating mature bulls. If a bull calf is not castrated before he is 8 months old, he may become "staggy", which is very objectionable in the feeder or fat steer.

In performing the operation there are two methods of making the incision; one is to slit each side of the scrotum parallel to the median line. The incision should be made on one side and the testicle removed from that side before making the incision on the other side. The incision should be made over the center of the testicle, and from about the top one-third to the lower end. It is essential to extend the slit well toward the lower end of the scrotum so as to allow for proper drainage. The other method is to grasp the lower end of the scrotum and stretch it out tightly, cutting off the lower one-third. In this method the ends of both testicles are exposed. One testicle should be removed at a time and may be accomplished by pulling or pressing the testicle out of the scrotum and cutting it off, allowing 3 or 4 inches of the cord to remain on the testicle. In the case of young calves, the cord may be cut squarely off, but in older bulls it is advisable to twist the cord rather tightly by holding the cord with the left hand and with the right hand twisting the free end before severing the cord. Some cattlemen prefer to draw the cord tightly over the index finger of the left hand and sever it by scraping with the knife. Either of these last two methods of severing the cords on older animals has a tendency to check the flow of blood. It is necessary to perform the operation with clean instruments under sanitary conditions. Wounds and any infection that may arise may be treated the way outlined under Dehorning.

SPAYING OF HEIFERS

The practice of castrating or spaying heifers is more common in the range country than in other beef-producing areas. The extent to which this operation is performed depends largely on the status of the beef-cattle industry. When values are comparatively high and the trend is upward, there is a tendency toward increasing the size of the breeding herd by retaining most of the females for breeding purposes. In other times, when cattle prices are low and there is no immediate prospect of an upward swing in cattle values, there is a noticeable increase in the number of heifers spayed.

The losses resulting from spaying, when properly done, are very small, being little more than those resulting from the castration of bulls. Comparatively few ranchmen spay their heifers themselves. Ordinarily, veterinarians or experienced cattle spayers are employed to do the work.

FIGURE 4.—Hair has been clipped and petrolatum applied around the undeveloped horn.

BRANDING

During the earliest days of the cattle-raising industry in the United States the practice of branding and marking cattle as a means of identification was begun and has been retained, through changing methods of handling cattle, until the present day. The custom is still widely practiced. In the more thickly populated farming communities, where pastures are usually small and the number of cattle raised annually is limited to a few head on each farm, the custom of branding or marking is not so popular as in sections less densely populated. On small farms the owner sees his cattle daily, knows them by their natural markings, and generally does not consider branding or marking necessary. But in the case of the man who produces cattle on a large scale, utilizing large pastures or the open range, and does not come in contact with them often, as the smaller farmer does, the practice of branding, in particular, is considered necessary, and often earmarking is done as an additional means of identification.

The brand of a cattleman is the trade mark of his line of production. The most successful ranchers take great pride in it, and attempts are made to maintain a standard. Seeing a good animal bearing a cattleman's brand gives the cattleman an exultant feeling

of proprietorship. The brand is a thing guarded closely, and in all cattle-raising States, particularly the range States, the law deals severely with those guilty of changing or tampering with brands or marks in any way.

In some Western States the law compels the branding of livestock that are to be turned upon the range. The livestock laws of Arizona for instance, state specifically that it is unlawful for any unbranded livestock except unweaned calves to run on the range. Other States go farther and forbid the slaughter of unbranded animals, and nearly all Western States require the keeping of a record of brands of slaughtered animals.

FIGURE 5.—Applying caustic to the undeveloped horn.

AGE AT BRANDING

Among cattlemen the common practice is to brand calves before they are weaned. After weaning, the probability of a calf's going astray is far greater than before, and, in order to lessen the loss thus incurred, branding is done at the earliest possible time. It sometimes occurs that disputes arise as to the ownership of a calf. In this event the custom is to concede ownership to the owner of the cow which the calf sucks. These statements are particularly true where the open range is used or where the mixing with other cattle is probable. In the days of the "round-up" it was customary to brand fall calves in the spring and spring calves in the fall, provided the cattle were not worked during the summer. In that case the branding was seldom delayed.

Cattle that change ownership are usually rebranded, and old brands are crossed out.

METHODS OF BRANDING

There are two common methods of branding cattle, the application of a hot iron and the use of a cold iron dipped in a commercial branding fluid. Both methods leave a permanent scar. The hot-iron method has been extensively used for many years. Only during recent years has branding fluid, sometimes called branding paint, been used, and this method has not become general. However, results of tests indicate that the practice may become more prevalent. The cold brand is more conveniently applied, especially when only a

few animals are to be branded, and the process is presumably less painful.

There are two general methods of handling cattle that are to be branded. These are (1) casting or throwing, and (2) chute branding. Throwing has given way to the latter method because of injuries often incurred, the greater degree of ease with which the operation may be done in a properly constructed chute, the saving of labor, and the slighter disturbance of the cattle in the corral.

It is very difficult to build a squeeze that will be equally effective in holding small calves and older cattle. For branding, ordinarily it is best to consider the yearling as the smallest sized animal to be worked in a squeeze, and resort to other methods in branding calves. Progressive ranchmen in many of the highly developed ranching communities are discarding the old method of "roping out" calves on the range, or even using ropes in corrals. Instead, herds are being worked in corrals, calves are separated from the cows and driven into small pens known as "crowding pens." The calves are thrown by hand, the smaller ones being "flanked" and the larger ones "mugged" down. Flanking or mugging is less likely to result in injury than is roping.

Chute branding older cattle is preferable to throwing, regardless of the method. Care should be taken in closing the squeeze to avoid injury. It is very easy to crush a hip of an animal that is being confined in a powerful squeeze. For that reason the leverage of a squeeze should not be so great that the operator is likely to overlook the degree of pressure applied.

If chute branding is to be done, the location of the brand on the animal should be one easily reached through the bars of the squeeze. In addition, the letters, numerals, or other characters composing the brand should be of a kind easily made. Intricate characters lead to confusion in brand reading as well as to difficulty in branding.

TYPES OF IRONS

Branding irons are of two general types, namely, "running" irons and "stamping" irons, the former being plain hooks, the use of which is described below. Both types are used for hot branding, but the stamping irons have proved to be better for liquid branding. Some States have laws prohibiting the use of running irons, for the reason that in the hands of unscrupulous persons they can be used effectively in changing brands. There is little defense for the use of extremely large characters in a brand. A character 4 inches in height is usually large enough for identification purposes, especially if it is applied properly. Characters with extremely acute angles should be avoided if a stamping iron is to be used, because the heat of the iron may cause a blotch instead of showing the lines composing the brand. Open letters such as **O**, **C**, **D**, **P**, and **Q** can be made distinctly with a stamping iron. Such letters as **A**, **M**, **N**, **W**, and **X** can usually be made with a running iron by making the required number of applications of the iron to complete the letter. The rod or bar iron or steel of which the characters are made should be large enough to hold sufficient heat and yet small enough to make a neat line. Material ranging from one-fourth to one-half inch in diameter is commonly used, and ⅜-inch material is a de-

sirable dimension for fire or hot-iron branding. This type of branding iron should have handles 2½ feet long or longer to permit handling the irons effectively. Stamping irons for liquid branding should have concave faces of one-half inch and may be fitted with short handles.

APPLICATION OF BRAND

In applying the hot iron, caution should be exercised that the iron is neither too hot nor too cool. Judgment will come with experience. Deep burning is cruel and unnecessary; if the surface of the hide is merely scorched the brand usually peels and remains distinct. The slipping of an iron usually results in a poor imprint, and should be guarded against. Keep the face of the branding iron free from burnt hair by rubbing it against the ground after finishing the brand. Linseed or other cooling oils are very good to apply to a brand after the work is finished.

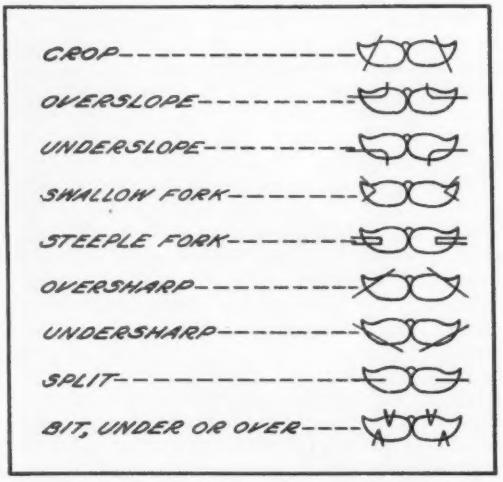

FIGURE 6.—Common earmarks of cattle.

In applying the cold stamping iron for liquid branding, the iron should be dipped in one-eighth inch of branding fluid which has been stirred thoroughly. The brand should be applied only to a surface with short dry hair and should be held in contact with the surface to be branded for about the same time as required for hot branding.

MARKING

The practice of marking cattle by cutting the ears is almost as universal as branding, and is usually done at the same time as branding. It is not uncommon for cattlemen to perform all operations—castration, branding, and marking—at the same time. Earmarks are rather secondary to branding, although they are recorded in the brand records and are protected by law. Either or both ears may bear a mark, and a reason often given for marking is that cattle can be identified from the direct front or rear, as it is often difficult to get a side view of wild cattle in pasture or on the range.

A sharp knife should be used in marking cattle, as the cartilage of the ear is usually tough and clean cuts should be made. Some of the common marks are described below and are illustrated in figure 6.

CROP

Fold the ear lengthwise and make the cut at right angles to the folded edge.

OVERSLOPE

Make an incision a fraction of an inch from the point, toward the head, where the upper surface of the ear turns up. Cut down in a rounding manner approximately one-half inch and then cut parallel to a line that would halve the ear lengthwise. A little upward slope given to the last cut gives a graceful curve.

UNDERSLOPE

The underslope cut is the underportion of the ear, and the first cut is made in an upward manner. The second, however, is practically the same as in an overslope.

SWALLOW FORK

Fold the ear lengthwise. From a point three-fourths of an inch or 1 inch from the tip, depending on the size of the ear, cut toward the outer edges in such direction or manner that a triangular section with a ½- or ¾-inch base will be removed.

STEEPLE FORK

Fold the ear lengthwise. Make the first cut at right angles to the seam, and the second cut parallel to the seam. Remove a rectangular section of the ear.

OVERSHARP

The cut is begun at the same point as for an overslope, but brought downward and in a straight line to the median line at the tip of the ear.

UNDERSHARP

Cut as an underslope except for an upward straight line to the point mentioned above.

SPLIT

The knife blade is inserted and drawn to the outer edge of the ear.

BIT, UNDER OR OVER

Fold the ear crosswise at the point where the bit is to be made. Remove a triangular section, as in making a shallow fork.

DEWLAP MARKS

In some localities marks are made in the dewlap. This method offers no particular advantage over the usual methods of marking and branding, gives rise to a greater chance of screw-worm infection, and it seems but an application of good husbandry to discourage the practice.

XUM

DEHORNING AND BRANDING CHUTES

In making a chute for holding cattle it is especially desirable in localities where branding is done to have one side movable so that the animal can be held snugly under pressure and without injury against the side of the chute. A branding chute so constructed is known as a cattle squeeze (figs. 7 and 8). This type, aside from

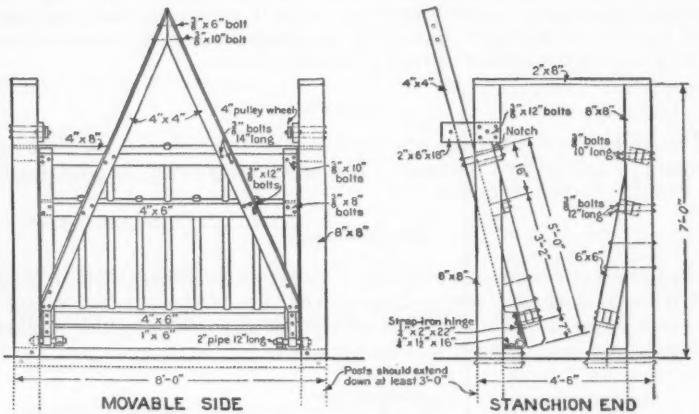

FIGURE 7.—Movable side and stanchion end of cattle squeeze. Design 2197.

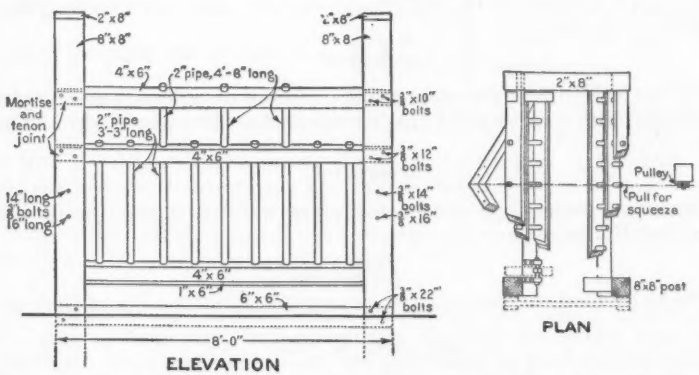

FIGURE 8.—Stationary side and plans of cattle squeeze, showing position of pulley. Design 2197.

being useful in connection with branding, also has an advantage over the ordinary chute when castrating and vaccinating are to be done, as the animal can be held more firmly. The design shown on the cover of this bulletin is typical of the more commonly used chutes with the stationary sides. If a chute with both sides stationary is desired, the two sides may be constructed alike, as in figure 8. The dehorning gate may be set up at the end of the squeeze and the two used together very conveniently.

In the dehorning of cattle it is essential to have the front of the chute so constructed that the head of the animal may be held absolutely firm. There are many designs in use which are satisfactory. Figures 9 and 10 illustrate two types that are frequently used by cattlemen. Specifications for each type are given in connection with the drawings.

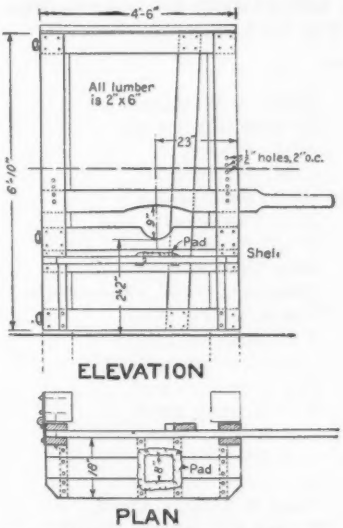

FIGURE 9.—A practical type of stanchion gate. In this type the nose is placed in a hole and held there by a bar pressing downward against the top of the neck.

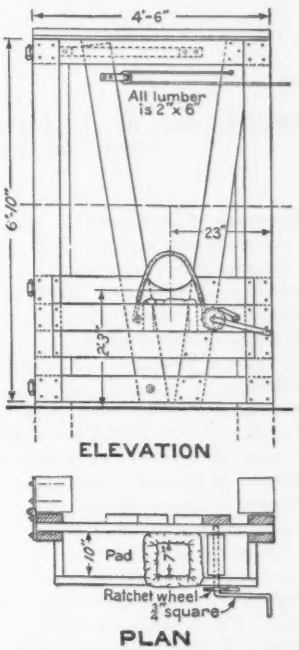

FIGURE 10.—Another type of stanchion gate. The head is held down by a rope or chain over the neck and connected with a pulley and ratchet. The nose is held in the same way as in figure 9.

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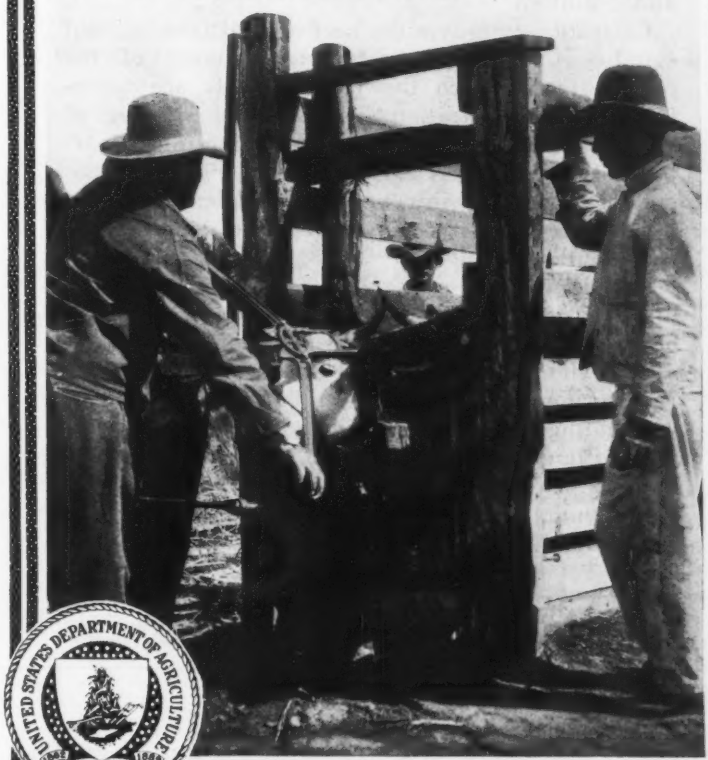
U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1600 rev. July 1936

DEHORNING, CASTRATING, BRANDING, AND MARKING BEEF CATTLE



XUM

AS A RULE horns and choice beef carcasses do not go together. Feeder cattle having horns do not feed out so well as dehorned cattle. Shipments of horned cattle usually result in bruised carcasses; and bruises detract greatly from the appearance of the carcasses, lowering their sale value. Not only the meat, but frequently the hide also is damaged. Dehorned cattle usually bring from 25 to 75 cents a hundredweight more than horned cattle of similar quality and condition.

Castration improves the beef animal from a meat standpoint, causing greater development of the regions from which the valuable cuts are taken. Losses from castration of bulls and spaying of heifers are almost negligible if the operation is performed by an experienced person. Flies are the greatest source of infection of wounds; hence the importance of castrating, spaying, and dehorning in cool weather.

Branding is necessary as a means of identification in many of the range-cattle-production areas. The brand should be small, however, and should be placed where it can be seen readily.

Dehorning, castrating, branding, marking, and vaccinating may be performed most satisfactorily and with greatest speed when a well-constructed chute is provided for holding the animal.

This bulletin is a revision of and supersedes Farmers' Bulletin 949, Dehorning and Castrating Cattle.

Washington, D. C.

Issued May 1929
Revised July 1936

DEHORNING, CASTRATING, BRANDING, AND MARKING BEEF CATTLE

By W. H. BLACK, *senior animal husbandman*, and V. V. PARR, *agent in animal husbandry, Animal Husbandry Division, Bureau of Animal Industry*

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DEHORNING

GENERALLY SPEAKING, the younger cattle are when they are dehorned the better beef animals they will make. If dehorning is done while the calf is young, the operation will be less severe. It is important to dehorn during cool weather to avoid infestation by flies. If flies are present when calves are dehorned in the late spring or early fall, the wounds should be treated with pine-tar oil (specific gravity 1.065). Dehorning may be accomplished by the use of saws (fig. 1) and mechanical dehorners (figs. 2, 3, and 4), of which there are a number of desirable kinds. The growth of horns in young calves may be prevented by using caustic soda or potash (figs. 5 and 6).

DEHORNING WITH SAWS AND MECHANICAL DEHORNERS

Saws or mechanical dehorners are used almost exclusively in the range country, where it is necessary to handle great numbers of cattle in a short period of time. Greater speed is possible when mechanical dehorners are used, though when only a few cattle are to be dehorned, the saw is very satisfactory. In dehorning with saws or any of the mechanical dehorners, it is advisable to remove the horn from a point about one-quarter of an inch below the junction of the horn with the skin or hide. If this is done, the skin will grow over the horn-forming cells and prevent further growth of horns. If mechanical dehorners are used on animals other than very young calves, it is necessary to have the animal held securely. In the range country, a combined dehorning and branding chute (known as a "squeeze"), with one side movable, is used almost exclusively for yearlings and older cattle. Calves are usually dehorned at the same

time that they are branded, and chutes are rarely used. Instead, the calf's head is held firmly as the dehorner is used. Under farm conditions, where branding is not resorted to, chutes with stationary sides are more commonly used. (See cover design.) Plans for a squeeze and desirable types of stanchion gates are shown in figures 10 to 13, inclusive.

CAUSTIC FOR PREVENTING HORN GROWTH

In small herds kept under close supervision, a satisfactory method of dehorning is the use of caustic soda or potash. The method is in reality one of preventing horn growth rather than of actual removal of the horns. Best results are obtained by this method on very young calves when only small "buttons" are present. Certain precautions should be taken in the use of the caustic as this chemical compound eats or burns flesh coming in contact with it. The hair should be clipped from around the base of the small, undeveloped horns or buttons, and petrolatum applied (fig. 5) to prevent the caustic from coming into contact with the skin. The end of the caustic to be held in the hand should be wrapped in paper or cotton and the other end moistened slightly. The moistened end of the caustic is then rubbed on the undeveloped horn (fig. 6). Two or three applications are necessary, the caustic being allowed to dry after each application. If the applications are thorough, further horn growth will be prevented. Calves treated with caustic should be protected from rain for a few days following the treatment.

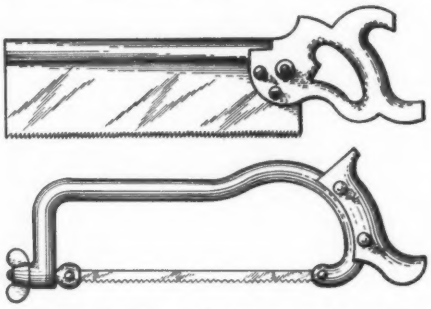

FIGURE 1.—Types of saws commonly used in dehorning.

TREATMENT OF WOUND

If dehorning is done in cool weather, when there are no flies, no treatment is required. If, on the other hand, the operation is performed when there is danger of infestation by flies, it is important to apply a fly repellent to the wound. Pine-tar oil smeared on the wound is usually effective. A mixture of pine-tar oil and tannic acid is also very satisfactory. In many sections of the country, especially in the warmer areas, screwworm infestation is rather common and severe. Farmers' Bulletin 857 contains the following directions for screwworm treatment:

> For destroying the maggots in a wound, nothing better than benzol has been found. There are several grades of benzol on the market, but for killing screwworms the "commercial 90 per cent benzol" is best. This material has a number of distinct advantages over other larvicides. It does not injure the tissues, kills the larvæ rather rapidly, is comparatively inexpensive, and does not deteriorate upon standing. If there is a comparatively small hole in the skin at the site of infestation it is best to pour a small quantity of the benzol into the hole and plug it with cotton. Benzol does not mix readily with blood

or serum, hence it is necessary to remove the free exudate with cotton before applying the benzol. In the case of valuable animals, after the maggots are dead it is best to remove them with a pair of forceps, and the wound then may be washed with a good disinfectant solution, care being taken not to start

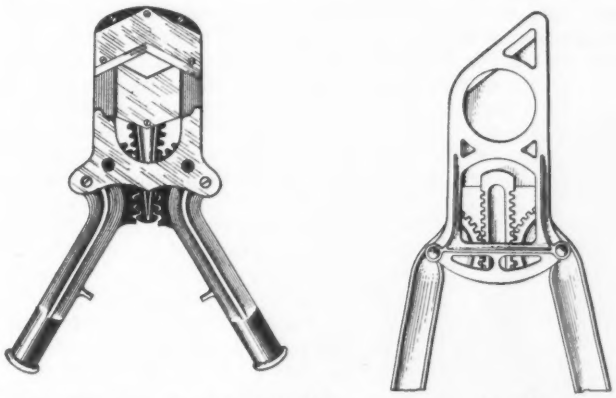

FIGURE 2.—Two types of mechanical dehorners known as dehorning clippers. One is provided with two knives, so constructed as to give four cutting surfaces; the other has a single blade. Both types have long handles (not shown), to provide leverage.

bleeding. After this the wound and soiled area about it should be coated with commercial pine-tar oil (specific gravity 1.035) or a slightly heavier grade of pine-tar oil (specific gravity 1.065). A mixture consisting of 10 parts of either of these pine-tar oils and 1 part of furfural has also been found to be a very effective repellent. Tannic acid dusted over a fresh wound will check bleeding, make it less attractive to flies, and make the pine-tar oil adhere better. When a wound is severe it is best to call in a competent veterinarian, especially if the infested animal is a valuable one.

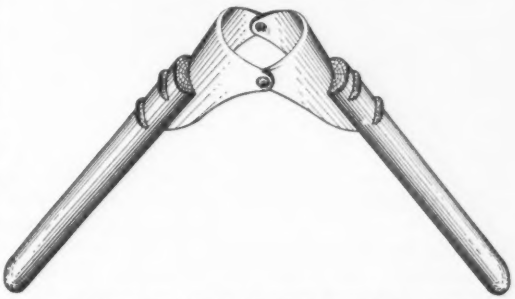

FIGURE 3.—A mechanical dehorner especially adapted to dehorning calves.

When it is necessary to perform any surgical operation during the fly season it is best always to apply pine-tar oil as mentioned above to avoid screwworms. Tannic acid may be used to check bleeding before the repellent is applied.

CASTRATION AND SPAYING

Castration consists in the removal of the testicles of the male. Spaying is the removal of the ovaries of the female.

Males in the beef herd are castrated primarily because beef qualities are developed to a higher degree in the steer. The beef animal is more refined and those parts of the body that furnish the most valuable cuts of meat are better developed if this operation is performed. Bulls, if 2 years old or older, normally have heavy

crests and better developed forequarters than hindquarters. This is objectionable from a meat standpoint, and bulls of this age are generally classed as "bologna" bulls.

Heifers are spayed to increase their value as meat animals, by eliminating the possibility of their becoming with calf. The opinion is common among producers that spayed heifers fatten faster on the range than "open" or unspayed heifers. In addition, spaying is used as a means of culling undesirable breeding heifers. As a management practice, spaying eliminates the necessity of separating the heifers from bulls or steers. Fat, spayed heifers under 2 years of age produce carcasses that compare very favorably with those from steers of the same age. Spayed heifers command higher values for beef purposes than those unspayed, as buyers are usually suspicious that open heifers are with calf, and make their purchases accordingly.

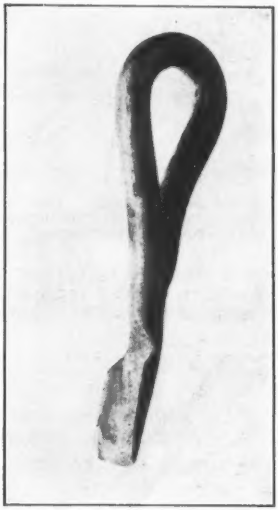

FIGURE 4.—Metal spoon or gouge used by some cattle breeders for dehorning calves.

In castrating and spaying, it is necessary to have the animals thrown and held firmly or placed in a squeeze or dehorning chute. Like dehorning, castration should be done in cool weather.

CASTRATION OF BULLS

Bull calves from a few weeks up to 8 months of age may be castrated without serious consequences. Hemorrhage or bleeding is more pronounced in old animals, and greater care must be used in castrating mature bulls. If a bull calf is not castrated before he is 8 months old, he may become "staggy", which is very objectionable in the feeder or fat steer.

In performing the operation there are two methods of making the incision; one is to slit each side of the scrotum parallel to the median line. The incision should be made on one side and the testicle removed from that side before the incision is made on the other side. The incision should be made over the center of the testicle, and from about the top one-third to the lower end. It is essential to extend the slit well toward the lower end of the scrotum so as to allow for proper drainage. The other method is to grasp the lower end of the scrotum and stretch it out tightly, cutting off the lower one-third. In this method the ends of both testicles are exposed. One testicle should be removed at a time, which may be accomplished by pulling or pressing the testicle out of the scrotum and cutting it off, allowing 3 or 4 inches of the cord to remain on the testicle. In the case of young calves, the cord may be cut squarely off, but in older bulls it is advisable to twist the cord rather tightly by holding it with the left hand and with the right hand twisting the free end before severing it. Some cattlemen prefer to draw the cord tightly over the index finger of the left hand and sever it by scraping with the knife. Either of these last

two methods of severing the cords on older animals has a tendency to check the flow of blood. It is necessary to perform the operation with clean instruments, under sanitary conditions. Wounds and any infection that may arise may be treated as outlined under Dehorning.

The method known as "bloodless castration" calls for a special type of pincers or clamps (fig. 7), which crush each cord separately an inch or two above the testicle. This method of castration is coming into more general use, especially in farm herds and on small ranches. The method is a satisfactory means of castration if done properly, but if the operation is performed too hastily the cord may be incompletely crushed, and the steer is apt to develop stagginess later on. Care should be taken to see that the cord is placed between the jaws of the pincers before they are closed. As there is no break in the skin of the scrotum, there is no external bleeding, which is a great advantage in areas in which screwworms are troublesome. The steers so castrated usually develop larger and fuller cods by the time they are ready for market, a characteristic that is very desirable in well-finished steers. Instruments for performing bloodless castration may be obtained from dealers who handle stockmen's supplies.

FIGURE 5.—Hair has been clipped and petrolatum applied around the undeveloped horn.

SPAYING OF HEIFERS

The practice of castrating or spaying heifers is more common in the range country than in other beef-producing areas. The extent to which this operation is performed depends largely on the status of the beef-cattle industry. When values are comparatively high and the trend is upward, there is a tendency toward increasing the size of the breeding herd by retaining most of the females for breeding purposes. At other times, when cattle prices are low and there is no immediate prospect of an upward swing in cattle values, there is a noticeable increase in the number of heifers spayed.

The losses resulting from spaying, when properly done, are very small, being little more than those resulting from the castration of bulls. Comparatively few ranchmen spay their heifers themselves.

Ordinarily, veterinarians or experienced cattle spayers are employed to do the work.

BRANDING

Branding and marking were used in the earliest days of cattle raising in the United States as means of identifying cattle and have been retained and are still widely practiced today despite the many changes in methods of handling cattle. The custom of branding and marking cattle is not popular in thickly settled communities, where the farms are usually rather small and the cattle raised each year not too numerous for their owners to identify them readily by means of their natural markings; but on ranches, where cattle are raised on a large scale and infrequently seen by their owners, where large pastures or the open range is used, branding is considered necessary. Often the cattle are earmarked as an additional means of identification.

FIGURE 6.—Applying caustic to the undeveloped horn.

A cattleman's brand is his trade mark. Most successful ranchers take great pride in their brands and attempt to maintain certain standards. They derive deep satisfaction from seeing their brands on desirable animals. The brand is guarded closely and in all cattle-raising States, particularly the range States, the law deals severely with those guilty of changing or tampering with brands or marks in any way.

In some Western States the law compels the branding of livestock that are to be turned upon the range. The livestock laws of Arizona, for instance, state specifically that it is unlawful for any unbranded livestock except unweaned calves to run on the range. Other States go further and forbid the slaughter of unbranded animals, and nearly all Western States require the keeping of a record of brands of slaughtered animals.

AGE AT BRANDING

Among cattlemen the common practice is to brand calves before they are weaned. The probability of a calf's going astray after it is weaned is far greater than before, and, in order to lessen the loss thus incurred, branding is done at the earliest possible time. Sometimes disputes arise as to the ownership of a calf. In this event it

is customary to concede ownership to the owner of the cow which the calf sucks. This is particularly true where the open range is used or where mixing with other cattle is probable. In the days of the roundup it was customary to brand fall calves in the spring and spring calves in the fall, provided the cattle were not worked during the summer. If they were, the branding was seldom delayed.

Cattle that change ownership are usually rebranded, and old brands are crossed out.

Cattle are branded officially in the eradication of bovine tuberculosis and in Bang's disease work; these projects are being conducted cooperatively by the Federal Government and the States. Animals that react to the tuberculin test are branded on the left jaw with a letter **T**; those that show a positive reaction to the agglutination test for Bang's disease are branded on the left jaw with a letter **B**.

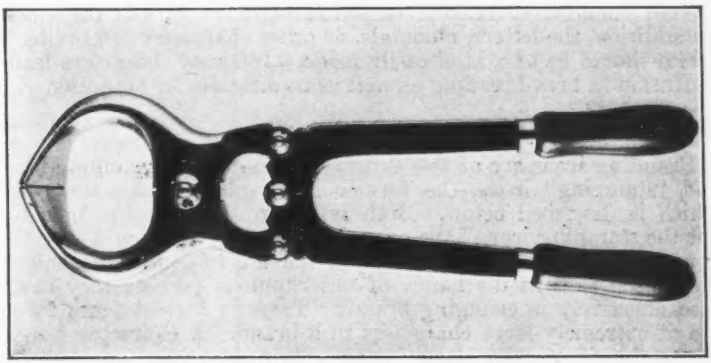

FIGURE 7.—One type of mechanical pincers or clamps used in bloodless castration.

METHODS OF BRANDING

There are two common methods of branding cattle, applying a hot iron and using a cold iron dipped in a commercial branding fluid. Both methods leave a permanent scar. The hot-iron method has been extensively used for many years. Only during recent years has branding fluid been used, and this method has not become general. However, results of tests indicate that the practice may become more prevalent. The cold brand is more conveniently applied, especially when only a few animals are to be branded, and presumably the process is less painful.

There are two general methods of handling cattle that are to be branded. These are (1) casting or throwing, and (2) chute branding. Throwing has given way to the latter method because of injuries often incurred, the greater degree of ease with which the operation may be done in a properly constructed chute known as a "squeeze", the saving of labor, and the slighter disturbance of the cattle in the corral.

It is very difficult to build a squeeze that will be equally effective in holding small calves and older cattle. For branding, ordinarily it is best to consider the yearling as the smallest-sized animal to be worked in a squeeze, and resort to other methods in branding calves.

XUM

Progressive ranchmen in many of the highly developed ranching communities are discarding the old method of "roping out" calves on the range, or even using ropes in corrals. Instead, herds are being worked in corrals, calves are separated from the cows and driven into small pens known as "crowding pens." The calves are thrown by hand, the smaller ones being "flanked" and the larger ones "mugged" down. Flanking or mugging is less likely to result in injury than is roping.

Chute-branding older cattle is preferable to throwing, regardless of the method. Care should be taken in closing the squeeze to avoid injury. It is very easy to crush a hip of an animal that is being confined in a powerful squeeze. For that reason the leverage of a squeeze should not be so great that the operator is likely to overlook the degree of pressure applied.

If chute branding is to be done, the location of the brand on the animal should be one easily reached through the bars of the squeeze. In addition, the letters, numerals, or other characters composing the brand should be of a kind easily made. Intricate characters lead to confusion in brand reading as well as to difficulty in branding.

TYPES OF IRONS

Branding irons are of two general types, namely, "running" irons and "stamping" irons, the former being plain hooks, the use of which is described below. Both types are used for hot branding, but the stamping irons have proved to be better for liquid branding. Some States have laws prohibiting the use of running irons, for the reason that in the hands of unscrupulous persons they can be used effectively in changing brands. There is little defense for the use of extremely large characters in a brand. A character 4 inches in height is usually large enough for identification purposes, especially if it is applied properly. Characters with extremely acute angles should be avoided if a stamping iron is to be used, because the heat of the iron may cause a blotch instead of showing the lines composing the brand. Open letters such as **O**, **C**, **D**, **P**, and **Q** can be made distinctly with a stamping iron. Such letters as **A**, **M**, **N**, **W**, and **X** can usually be made with a running iron by making the required number of applications of the iron to complete the letter. The rod or bar iron or steel of which the characters are made should be large enough to hold sufficient heat and yet small enough to make a neat line. Material ranging from one-fourth to one-half inch in diameter is commonly used, and ⅜-inch material is a desirable dimension for fire or hot-iron branding. This type of branding iron should have handles 2½ feet long or longer to permit handling the irons effectively. Stamping irons for liquid branding should have concave faces of one-half inch and may be fitted with short handles.

APPLICATION OF BRAND

In applying the hot iron, caution should be exercised that the iron is neither too hot nor too cool. Judgment will come with experience. Deep burning is cruel and unnecessary; if the surface of the hide is merely scorched the brand usually peels and remains distinct. The slipping of an iron usually results in a poor imprint, and

should be guarded against. Keep the face of the branding iron free from burnt hair by rubbing it against the ground after finishing the brand. Linseed or other cooling oils are very good to apply to a brand after the work is finished.

In applying the cold stamping iron for liquid branding, the iron should be dipped in one-eighth inch of branding fluid which has been stirred thoroughly. The brand should be applied only to a surface with short dry hair and should be held in contact with the surface to be branded for about the same time as required for hot branding.

MARKING

The practice of marking cattle by cutting the ears is almost as universal as branding, and is usually done at the same time as branding. It is not uncommon for cattlemen to perform all operations—castration, branding, and marking—at the same time. Earmarks are rather secondary to branding, although they are recorded in the brand records and are protected by law. Either or both ears may bear a mark, and a reason often given for marking is that cattle can be identified from the direct front or rear, as it is often difficult to get a side view of wild cattle in pasture or on the range.

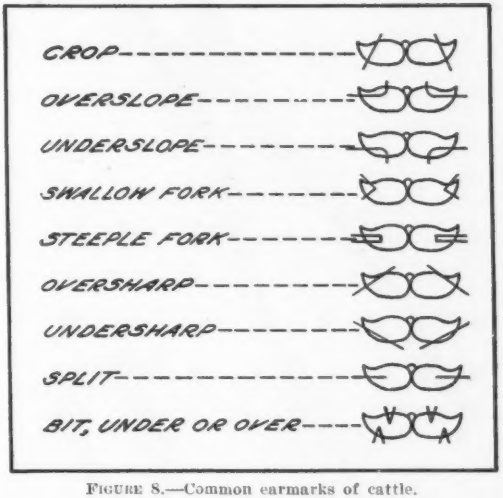

FIGURE 8.—Common earmarks of cattle.

A sharp knife should be used in marking cattle, as the cartilage of the ear is usually tough; and clean cuts should be made. Some of the common marks are described below and are illustrated in figure 8.

Crop.—Fold the ear lengthwise and make the cut at right angles to the folded edge.

Overslope.—Make an incision a fraction of an inch from the point, toward the head, where the upper surface of the ear turns up. Cut down in a rounding manner approximately one-half inch and then cut parallel to a line that would halve the ear lengthwise. A little upward slope given to the last cut gives a graceful curve.

Underslope.—The underslope cut is the underportion of the ear, and the first cut is made in an upward manner. The second, however, is practically the same as in an overslope.

Swallow Fork.—Fold the ear lengthwise. From a point three-fourths of an inch or 1 inch from the tip, depending on the size of

the ear, cut toward the outer edges in such direction or manner that a triangular section with a ½- or ¾-inch base will be removed.

Steeple Fork.—Fold the ear lengthwise. Make the first cut at right angles to the seam, and the second cut parallel to the seam. Remove a rectangular section of the ear.

Oversharp.—The cut is begun at the same point as for an overslope, but brought downward and in a straight line to the median line at the tip of the ear.

FIGURE 9.—A tattooing instrument. Note how the points making individual numbers may be removed from the jaws of the instrument (at right).

Undersharp.—Cut as an underslope except for an upward straight line to the point mentioned above.

Split.—The knife blade is inserted and drawn to the outer edge of the ear.

Bit, under or over.—Fold the ear crosswise at the point where the bit is to be made. Remove a triangular section, as in making a swallow fork.

TATTOOING

Tattooing the ears is another method of marking cattle and is especially adapted for use in purebred herds. It is considered a more permanent method of identification than cutting the ears, as the tattooing is done with a special instrument (fig. 9) which places characters, letters, or numerals in and under the skin of the ear by means of a series of needlelike points which are dipped in a special indelible ink before application. The operation is a simple one which does not make an open wound. It is advisable to apply additional ink to the ear after the perforations have been made so as to insure the permanence of the identification. Tattooing instruments are obtainable from most dealers who handle stockmen's supplies.

EARTAGGING

Eartagging is still another method of identification which, like tattooing, is used largely on purebred herds. Metal tags, or buttons,

are clamped into the ear by means of special clamps. The tag or button carries the identification number or letters. Both the tags and clamps for placing them in the ears may be obtained from dealers who handle stockmen's supplies.

NECK CHAINS

In some instances owners of purebred cattle prefer not to make permanent identifications with earmarks, eartags, or tattoo marks in

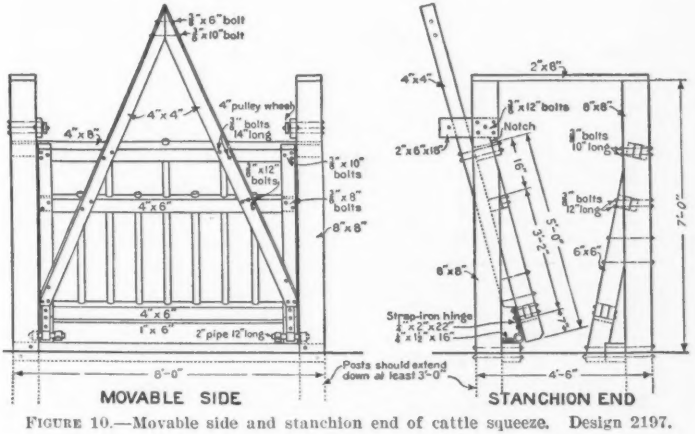

FIGURE 10.—Movable side and stanchion end of cattle squeeze. Design 2197.

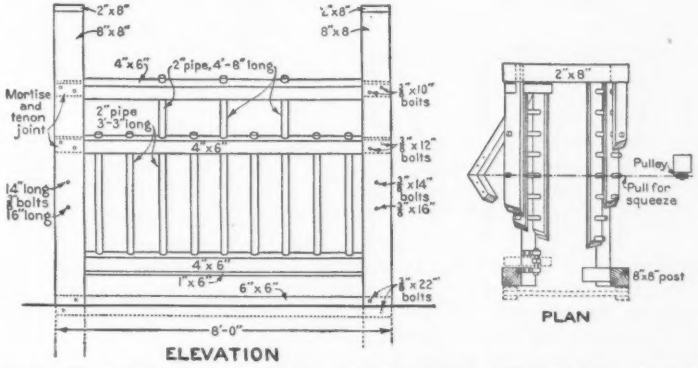

FIGURE 11.—Stationary side and plans of cattle squeeze, showing position of pulley. Design 2197.

the ears, but use neck chains that carry special identification numbers. Chains for the purpose may be purchased from supply houses.

DEHORNING AND BRANDING CHUTES

In making a chute for holding cattle it is especially desirable in localities where branding is done to have one side movable so that the animal can be held snugly under pressure and without injury

against the side of the chute. A branding chute so constructed is known as a cattle squeeze (figs. 10 and 11). This type, aside from being useful in connection with branding, also has an advantage over the ordinary chute when castrating and vaccinating are to be done, as the animal can be held more firmly. The design shown on the cover of this bulletin is typical of the more commonly used chutes

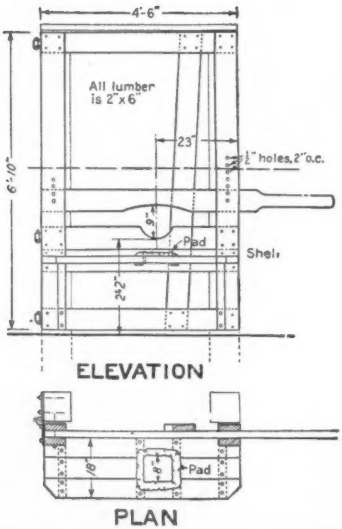

FIGURE 12.—A practical type of stanchion gate. In this type the nose is placed in a hole and held there by a bar pressing downward against the top of the neck.

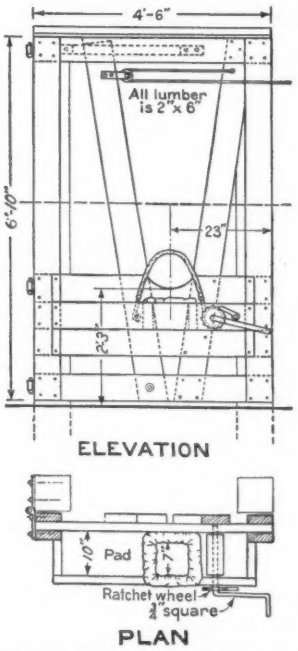

FIGURE 13.—Another type of stanchion gate. The head is held down by a rope or chain over the neck and connected with a pulley and ratchet. The nose is held in the same way as in figure 12.

with the stationary sides. If a chute with both sides stationary is desired, the two sides may be constructed alike, as in figure 11. The dehorning gate may be set up at the end of the squeeze and the two used together very conveniently.

In the dehorning of cattle it is essential to have the front of the chute so constructed that the head of the animal may be held absolutely firm. There are many designs in use which are satisfactory. Figures 12 and 13 illustrate two types that are frequently used by cattlemen. Specifications for each type are given in connection with the drawings.

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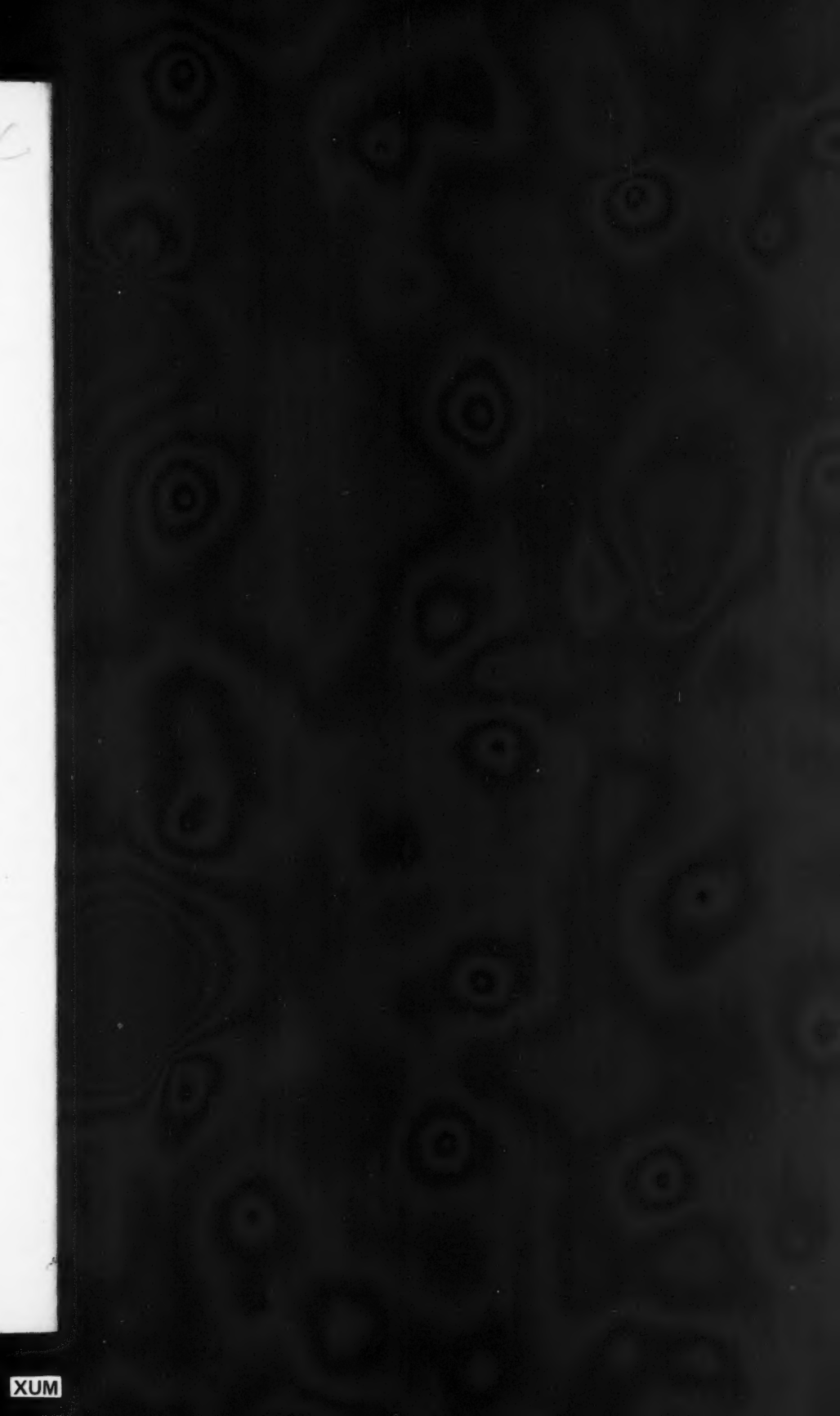
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